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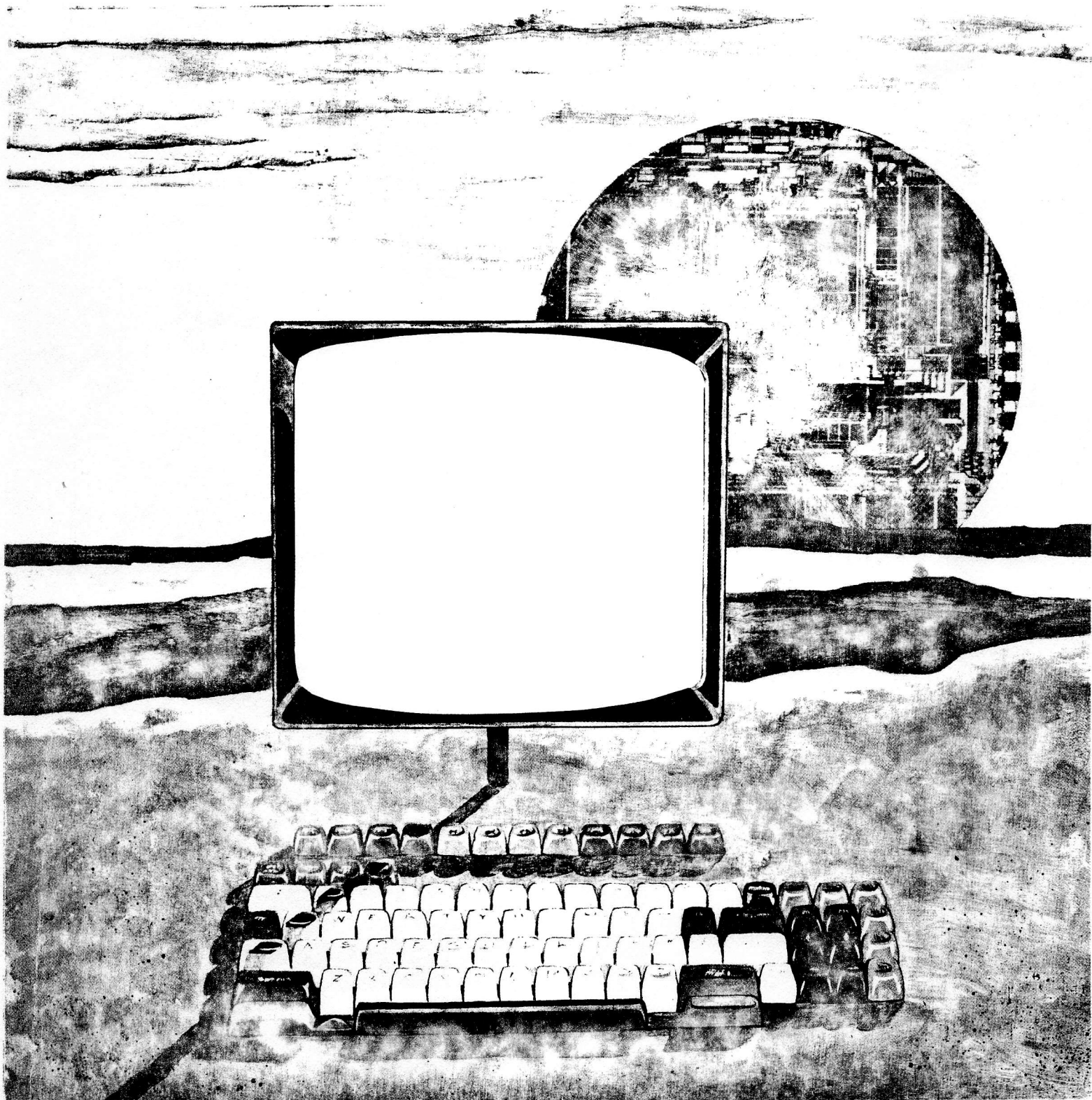
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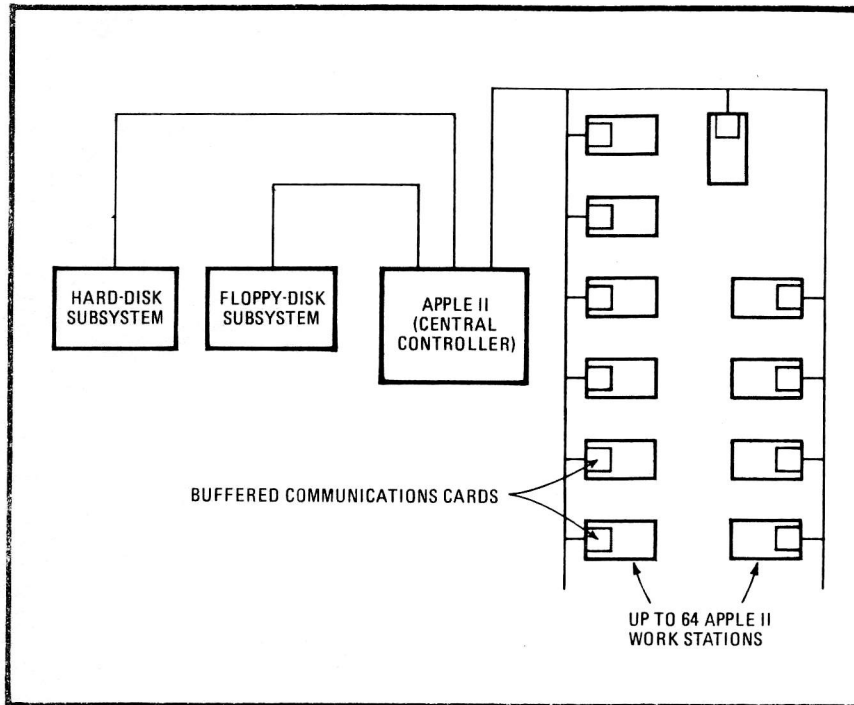
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# Electronics®



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## Electronics review



**Apple network.** A hardware-software package from Nestar Systems organizes as many as 65 Apple II personal computers into a low-cost network with sophisticated communications.

### Network links units, includes mass store

A new world of applications is opening up for personal computers now that time-sharing and distributed-processing procedures are being added to their repertoires. Much of the groundwork for these additions is coming from a small California firm, Nestar Systems Inc.

The Palo Alto company last year developed personal computer cluster—several machines time-sharing a large program library—that is finding a niche as a limited-function, local network in classrooms and laboratories. Now Nestar is following up with a network having greatly expanded storage and far more sophisticated communications.

**New affiliations.** Whereas the initial Cluster/One system allows as many as 30 personal computers access to a central program library, it did not provide communications between terminals or a means of maintaining an on-line data base. Now that those functions are available in the model A, personal computers can be expected to vie with small business computers in

many existing office-system applications, among them word processing and electronic mail, and to make computer nets affordable for lower-level applications. In a 10-station network, the cost per work station would be less than \$2,800, or about one third that of existing communicating word processors.

Intended also for the educational market, the new hardware and software link as many as 65 standard Apple personal computers—one serving as a central mass storage manager—into a high-speed computer network (see figure). The model A allows users transparent access to programs, files, and data resident in the central processor.

According to Harry Saal, president of the 1½-year-old firm, message blocks can be transmitted at 120 kilobits a second directly from work station to work station. Each station can connect to a central memory able to store up to 33 million bytes. "It allows for the ultimate combination of personal computers and central resources, because it moves applications based in an 8-inch disk into a network for multiple users to access," says Saal.

**Controller.** In the model A network, a standard Apple computer

with 48 kilobytes of random-access memory functions as a dedicated central controller and mass-storage manager with connections to storage subsystems and other Apples that serve as user stations. All stations share access to a common read-only library of programs and data and can have their individual data bases simultaneously updated.

Basically, Nestar's model A offering consists of a 10-by-20-by-29-inch metal package with a read-only library of two double-sided 8-in. floppy disks having a formatted storage capacity of 1,260 kilobytes; the necessary electronics that plug into the central controller to provide communications and mass-storage control; the ClusterBus communications card; the communications cards required for each Apple station; and the necessary software. The communications cards for each station contain a 1-kilobyte RAM for transparent buffering and 2 kilobytes of read-only memory for network interface routines, as well as all necessary bus electronics.

The software includes protection to preserve data and prevent unauthorized access. A "lock" command permits a primary user to update a specific data base unhampered.

The model A has a gateway feature that, Saal says, allows users to interconnect two or more networks. One work station in each network has two communications cards, each linked to a different network. Users can write programs in one network requesting programs or data from another. **-Bruce LeBoss**